

**ABSTRACT**

In accordance with a first aspect of the invention, a metal substrate is provided with a layer of tin or tin alloy that is coated under tensile stress to inhibit the growth of tin whiskers. The tensile stressed tin and tin alloy is preferably coated with a grain size larger than 1 micrometer. Advantageously the tin or tin alloy is coated on an underlayer chosen to maintain or generate the tensile stress state in the tin coating. The tensile stress inhibits whisker growth, and the resulting structure is particularly useful as a part of an electrical connector or lead frame. In a second aspect of the invention, the tensile stress of tin coatings is monitored to provide coatings of reduced tendency toward whisker growth.